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09/328,645	06/09/1999	HENRY CHUNG	30-4718(4780	7088

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EXAMINER	
VU, HUNG K	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 21

Application Number: 09/328,645
Filing Date: June 09, 1999
Appellant(s): CHUNG, HENRY

Richard S. Roberts
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 4/8/03.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 5-7 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

6,008,540	LU ET AL.	12-1999

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Lu et al. (PN 6,008,540).

Lu et al. discloses, as shown in Figure 1g, an integrated circuit structure which comprises

a substrate (102);

a layer of a first polymeric dielectric material (144 of HSQ) on the substrate [Col. 5, lines 1-3];

Lu et al. teaches, at Col. 5, lines 16-49, more levels will be formed by repeating steps (4)-(15). As the result a plurality of spaced apart metal contacts (160, equivalent to 130) being formed on the layer of the first dielectric material (144 of HSQ);

a space between adjacent metal contacts, each space being filled with a second polymeric dielectric material (172 of xerogel, equivalent to 142) [Col. 5, line 3];

a recess in the filled spaces of the layer of the second polymeric dielectric material extending from a level at a top of the metal contacts a part of the distance toward the substrate;

an additional layer of the first polymeric dielectric material (174 of HSQ, equivalent to 144) on at least some of the metal contacts and in the recesses on the filled spaces of the second polymeric dielectric material such that there is optionally a gap in at least one of the recesses of the additional layer first polymeric dielectric material at a side wall of a metal contact [note that the examiner interprets the word "optionally a gap ... " as "no gap" at all] ;

Lu et al. teaches, at Col. 5, lines 16-49, more levels will be formed by repetition of steps (4)-(15), therefore, it is inherent that there is at least one via extending through the additional layer (174) of the first polymeric dielectric material extending to the top of at least one of the metal contacts (160) and optionally to the gap [note that the Examiner interpret the word "optionally" as "no or none"];

since the first dielectric material and the second dielectric material have different material, it is inherent that they have substantially different etch resistance properties.

In a different embodiment, Figure 2b, Lu et al. teaches forming the layer of first polymeric (242 of xerogel) on the substrate (102) [Col. 5, lines 30-33], a plurality of metal contacts (260) on the layer of first polymeric (242), the layer of second polymeric (244 of HSQ) filled the space between adjacent metal contact [Col. 5, lines 25-33], a recess in the filled space, and the additional layer of first polymeric (272 of xerogel) formed on the metal contacts (260) and in the recesses [Col. 5, line 45]. Or also in Figure 2b, Lu et al. teaches forming the layer of first polymeric (244 of HSQ) on the substrate (102) [Col. 5, lines 25-33], a plurality of metal contacts (260) on the layer of first polymeric (244), the layer of second polymeric (272 of xerogel) filled the space between adjacent metal contact [Col. 5, line 45], a recess in the filled space, and the

additional layer of first polymeric (274 of HSQ) formed on the metal contacts (260) and in the recesses [Col. 5, lines 45-46].

With regard to claim 6, Lu et al. discloses, at Col. 5, lines 16-49, more levels will be formed by repetition of steps (4)-(15), therefore, it is inherent that there is at least one via extending through the additional layer (174), wherein the via is filled with at least one metal [Col. 3, lines 23-47].

With regard to claim 7, Lu et al. discloses the first dielectric material (242, 272) is organic [xerogel, Col. 5, line 31 and Col. 5, line 45] and the second dielectric material (244) is inorganic [HSQ, Col. 5, lines 25-33].

*(11) **Response to Argument***

Appellant argues that Lu et al. does not disclose the formation of an additional layer of the first polymeric dielectric material on the metal contacts and in the recesses nor specify the material of the layer of the first polymeric dielectric material and the additional layer of the first polymeric dielectric material must be the same. This argument is not persuasive for the following reasons: First, Appellant relies on different elements than the ones used by the examiner. For example the examiner relied on elements 144, 160, 172 and 174 of Figure 1g, elements 242, 260, 244 and 272 of Figure 2b, or elements 244, 260, 272 and 274 also of Figure 2b, but Appellant argues about elements 120, 140, 130, 142, 144 and 146 of Figure 1g, or elements 246, 260, 270, 272, 274 and 276 of Figure 2b. Lu et al., in Figure 1f and Col. 5, lines 15-21, teaches that further levels result from repetition of steps (4) – (15). So, as shown in

Figure 1g, the additional layer of first polymeric (174 of HSQ) formed on the metal contacts (160) and in the recesses. The layer of first polymeric (144 of HSQ) and the additional layer of first polymeric (174 of HSQ) are formed of the same material.

Further, in a different embodiment, Figure 2b, Lu et al. teaches the additional layer of first polymeric (272 of xerogel) formed on the metal contacts (260) and in the recesses. The layer of first polymeric (242 of xerogel) and the additional layer of first polymeric (272 of xerogel) are formed of the same material. Or also in Figure 2b, Lu et al. teaches the additional layer of first polymeric (274 of HSQ) formed on the metal contacts (260) and in the recesses. The layer of first polymeric (244 of HSQ) and the additional layer of first polymeric (274 of HSQ) are formed of the same material.

Appellant argues that Lu et al. does not disclose the first and second dielectric materials have substantially different etch resistant properties. This argument is not persuasive because Lu et al. teaches the first and second dielectric materials are different (xerogel or HSQ), therefore, it is inherent that the first and second dielectric materials have substantially different etch resistant properties.

Appellant argues that Lu et al. does not disclose the second dielectric material which is in contact with the metal contacts and with the first dielectric material. This argument is not convincing because the features upon which Appellant relies (i.e., in contact with the metal contacts and with the first dielectric material) are not recited in the rejected claim(s).

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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